

Common on hills near Acapulco, Mexico, where collected by Dr. Edward Palmer between October 1894 and March 1895, no. 296.

I am indebted to Dr. Rose for calling my attention to this species, Dr. Palmer's specimen having been undistributed in the Gray Herbarium at the time of my recent revision of the genus. Types in herb. Gray and herb. U. S. National Museum. — B. L. ROBINSON.

### THE PROBABLE CAUSES OF THE POISONOUS EFFECTS OF THE DARNEL (*LOLIUM TEMULENTUM* L.).

THE presence of a poisonous principle in the darnel has been well known since the earliest investigations of the subject, and recent experiments confirm this fact. According to Hofmeister,<sup>1</sup> the darnel contains two active principles: *temulin*, obtained by this author as chloroplatinate, which acts upon the nervous system; and the other, determined by the oily substances and fatty acids which are contained in the seed in large proportion, which attacks the alimentary canal.

In the course of our researches upon the seed integuments and the pericarp of grasses, we have had occasion to note the practically constant presence in the seeds of the darnel of a fungus to which it seemed reasonable to us to assign the poisonous effects. This fungus, which is always present in the form of mycelial filaments, appears at an early stage in the interior of the ovary. In the first stages of its development it invades the entire nucellus. At the time that the external integument of the ovule disappears, the nucellus itself is almost entirely resorbed, with the exception of two or three of the outermost layers which, obliterated in the maturing of the grain, constitute the hyaline layer. Crowded out by the development of endosperm after fertilization, the mycelium becomes restricted between this hyaline layer and the outermost endosperm. It is in this zone that we have observed it in the mature seed. After the removal of the diverse coatings of the fruit, the hyphæ which constitute this fungus zone appear as septate filaments, generally very long, more or less branched and interwoven with one another. We have found this disposition of the fungus in material from Bolivia, Brazil, Chili, Abyssinia, Persia, Syria, Spain, Portugal, Sweden, Germany, and many localities in France. In forty seeds of most diverse origin the mycelial zone was lacking from but

<sup>1</sup> Archiv. f. exp. Path. u. Pharm. 30:—. 1892.



three. This observation has been confirmed in other species of *Lolium*, to wit, *L. perenne* L., *L. arvense* With. (var. of *L. temulentum*), *L. lini-cola* Sond. It is only exceptionally that the first of these contains the parasite. The rest are infected to the same degree as *L. temulentum*. When one observes that the species reported poisonous are the very ones in which we have found the parasite, it seems reasonable to ask whether the temulin of Hofmeister is not a result of the action of the fungus upon the nitrogenous materials in the peripheral region of the seed.

This fungus, of whose nature we are not yet satisfied, may not in any case be identified with the *Endoconidium temulentum* of Prillieux and Delacroix. The latter attacks the seeds of rye which it clearly deforms, the infected grains becoming smaller and lighter than the normal ones. The grains of the darnel show no such deformation. Further, in the rye grains thus attacked, and called "*seigle enivrant*," the protecting layer has generally disappeared, and all the external part of the endosperm has been invaded by the parasite. In the darnel the endosperm suffers no alteration from the action of the fungus, the protecting layer itself remaining perfectly intact. Since our observations were made the same mycelial layer has been noted by Hanausek and Nestler,<sup>2</sup> and before them by Vogl.<sup>3</sup>

Our results are practically alike. However, the other authors have described the fungus for *L. temulentum* alone.—P. GUÉRIN, *Préparateur École Supérieure de Pharmacie de Paris*.

<sup>2</sup>Berichte der deutschen botanische Gesellschaft 8: +. pl. 12-17. November 30. 1898.

<sup>3</sup>Die wichtigsten vegetabilischen Nahrungs- und Genussmittel. 1898.

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